I 196

AJ

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 December 2001 (06.12.2001)

PCT

(10) International Publication Number
WO 01/92581 A2

(51) International Patent Classification[7]: C12Q 1/68, G01N 33/574, A61K 39/00, C12N 5/06, 5/08

(21) International Application Number: PCT/US01/17756

(22) International Filing Date: 29 May 2001 (29.05.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/207,484 26 May 2000 (26.05.2000) US

(71) Applicant *(for all designated States except US)*: **CORIXA CORPORATION** [US/US]; Suite 200, 1124 Columbia Street, Seattle, WA 98104 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **ALGATE, Paul, A.** [GB/US]; 580 Kalmia Place N.W., Issaquah, WA 98027 (US). **HARLOCKER, Susan, L.** [US/US]; 7522 13th Avenue W., Seattle, WA 98117 (US). **JONES, Robert** [GB/US]; 900 20th Avenue E., Seattle, WA 98112 (US).

(74) Agents: **POTTER, Jane, E., R.**; Seed Intellectual Property Law Group PLLC, Suite 6300, 701 Fifth Avenue, Seattle, WA 98104-7092 et al. (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/92581 A2

(54) Title: COMPOSITIONS AND METHODS FOR THE THERAPY AND DIAGNOSIS OF OVARIAN CANCER

(57) Abstract: Compositions and methods for the therapy and diagnosis of cancer, particularly ovarian cancer, are disclosed. Illustrative compositions comprise one or more ovarian tumor polypeptides, immunogenic portions thereof, polynucleotides that encode such polypeptides, antigen presenting cell that expresses such polypeptides, and T cells that are specific for cells expressing such polypeptides. The disclosed compositions are useful, for example, in the diagnosis, prevention and/or treatment of diseases, particularly ovarian cancer.

14

WO0192581 [http://www.getthepatent.com/Lc log/Sexam.support/Fetch/Default.dog/WO0192581.cpc?fro che=1part=maintoolbar=bottom] Page 2 of 489

COMPOSITIONS AND METHODS FOR THE THERAPY AND DIAGNOSIS OF OVARIAN CANCER

STATEMENT REGARDING SEQUENCE LISTING

The Sequence Listing associated with this application is provided on CD-ROM in lieu of a paper copy under AI § 801(a), and is hereby incorporated by reference into the specification. Four CD-ROMs are provided containing identical copies of the sequence listing: CD-ROM No. 1 is labeled "COPY 1 – SEQUENCE LISTING PART," contains the file 497.app.txt which is 6.0 MB and created on May 29, 2001; CD-ROM No.2 is labeled "COPY 2 – SEQUENCE LISTING," contains the file 497.app.txt which is 6.0 MB and created on May 29, 2001; CD-ROM No. 3 is labeled "COPY 3 – SEQUENCE LISTING PART," contains the file 497.app.txt which is 6.0 MB and created on May 29, 2001; CD-ROM No. 4 is labeled "CRF," contains the file 497.app.txt which is 6.0 Mb and created on May 29, 2001.

TECHNICAL FIELD OF THE INVENTION

The present invention relates generally to therapy and diagnosis of cancer, such as ovarian cancer. The invention is more specifically related to polypeptides, comprising at least a portion of an ovarian tumor protein, and to polynucleotides encoding such polypeptides. Such polypeptides and polynucleotides are useful in pharmaceutical compositions, *e.g.*, vaccines, and other compositions for the diagnosis and treatment of ovarian cancer.

BACKGROUND OF THE INVENTION

Cancer is a significant health problem throughout the world. Although advances have been made in detection and therapy of cancer, no vaccine or other universally successful method for prevention and/or treatment is currently available. Current therapies, which are generally based on a combination of chemotherapy or surgery and radiation, continue to prove inadequate in many patients.

Ovarian cancer is a significant health problem for women in the United States and throughout the world. Although advances have been made in detection and

WO0192581 [http://www.getthepatent.com/Lo ...og/Sexam.support/Fetch/Default.dog/WO0192581.cpc?fror... ...che=1part=maintoolbar=bottom] Page 3 of 489

therapy of this cancer, no vaccine or other universally successful method for prevention or treatment is currently available. Management of the disease currently relies on a combination of early diagnosis and aggressive treatment, which may include one or more of a variety of treatments such as surgery, radiotherapy, chemotherapy and hormone therapy. The course of treatment for a particular cancer is often selected based on a variety of prognostic parameters, including an analysis of specific tumor markers. However, the use of established markers often leads to a result that is difficult to interpret, and high mortality continues to be observed in many cancer patients.

Immunotherapies have the potential to substantially improve cancer treatment and survival. Such therapies may involve the generation or enhancement of an immune response to an ovarian carcinoma antigen. However, to date, relatively few ovarian carcinoma antigens are known and the generation of an immune response against such antigens has not been shown to be therapeutically beneficial.

Accordingly, there is a need in the art for improved methods for identifying ovarian tumor antigens and for using such antigens in the therapy of ovarian cancer. The present invention fulfills these needs and further provides other related advantages.

In spite of considerable research into therapies for these and other cancers, ovarian cancer remains difficult to diagnose and treat effectively. Accordingly, there is a need in the art for improved methods for detecting and treating such cancers. The present invention fulfills these needs and further provides other related advantages.

SUMMARY OF THE INVENTION

In one aspect, the present invention provides polynucleotide compositions comprising a sequence selected from the group consisting of:

(a) sequences provided in SEQ ID NO: 1-10,912;

(b) complements of the sequences provided in SEQ ID NO: 1-10,912;

(c) sequences consisting of at least 20, 25, 30, 35, 40, 45, 50, 75 and 100 contiguous residues of a sequence provided in SEQ ID NO: 1-10,912;

WO0192581 [http://www.getthepatent.com/Lc . log/$exam support/Fetch/Default.dog/WO0192581.cpc?fro che=1part=maintoolbar=bottom]Page 4 of 489

(d) sequences that hybridize to a sequence provided in SEQ ID NO: 1-10,912, under moderate or highly stringent conditions;

(e) sequences having at least 75%, 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identity to a sequence of SEQ ID NO: 1-10,912;

(f) degenerate variants of a sequence provided in SEQ ID NO: 1-10,912.

In one preferred embodiment, the polynucleotide compositions of the invention are expressed in at least about 20%, more preferably in at least about 30%, and most preferably in at least about 50% of ovarian tumors samples tested, at a level that is at least about 2-fold, preferably at least about 5-fold, and most preferably at least about 10-fold higher than that for normal tissues.

The present invention, in another aspect, provides polypeptide compositions comprising an amino acid sequence that is encoded by a polynucleotide sequence described above.

In certain preferred embodiments, the polypeptides and/or polynucleotides of the present invention are immunogenic, *i.e.*, they are capable of eliciting an immune response, particularly a humoral and/or cellular immune response, as further described herein.

The present invention further provides fragments, variants and/or derivatives of the disclosed polypeptide and/or polynucleotide sequences, wherein the fragments, variants and/or derivatives preferably have a level of immunogenic activity of at least about 50%, preferably at least about 70% and more preferably at least about 90% of the level of immunogenic activity of a polypeptide sequence encoded by a polynucleotide sequence set forth in SEQ ID NO: 1-10,912.

The present invention further provides polynucleotides that encode a polypeptide described above, expression vectors comprising such polynucleotides and host cells transformed or transfected with such expression vectors.

Within other aspects, the present invention provides pharmaceutical compositions comprising a polypeptide or polynucleotide as described above and a physiologically acceptable carrier.

WO0192581 [http://www.getthepatent.com/Lo log/Sexam.support/Fetch/Default.dog/WO0192581.cpc?fror. che=1part=maintoolbar=bottom]Page 5 of 489

Within a related aspect of the present invention, the pharmaceutical compositions, *e.g.*, vaccine compositions, are provided for prophylactic or therapeutic applications. Such compositions generally comprise an immunogenic polypeptide or polynucleotide of the invention and an immunostimulant, such as an adjuvant.

The present invention further provides pharmaceutical compositions that comprise: (a) an antibody or antigen-binding fragment thereof that specifically binds to a polypeptide of the present invention, or a fragment thereof; and (b) a physiologically acceptable carrier.

Within further aspects, the present invention provides pharmaceutical compositions comprising: (a) an antigen presenting cell that expresses a polypeptide as described above and (b) a pharmaceutically acceptable carrier or excipient. Illustrative antigen presenting cells include dendritic cells, macrophages, monocytes, fibroblasts and B cells.

Within related aspects, pharmaceutical compositions are provided that comprise: (a) an antigen presenting cell that expresses a polypeptide as described above and (b) an immunostimulant.

The present invention further provides, in other aspects, fusion proteins that comprise at least one polypeptide as described above, as well as polynucleotides encoding such fusion proteins, typically in the form of pharmaceutical compositions, *e.g.*, vaccine compositions, comprising a physiologically acceptable carrier and/or an immunostimulant. The fusions proteins may comprise multiple immunogenic polypeptides or portions/variants thereof, as described herein, and may further comprise one or more polypeptide segments for facilitating the expression, purification and/or immunogenicity of the polypeptide(s).

Within further aspects, the present invention provides methods for stimulating an immune response in a patient, preferably a T cell response in a human patient, comprising administering a pharmaceutical composition described herein. The patient may be afflicted with ovarian cancer, in which case the methods provide treatment for the disease, or patient considered at risk for such a disease may be treated prophylactically.

WO0192581 [http://www.getthepatent.com/L... dog/Sexam.support/Fetch/Default.dog/WO0192581.cpc?fro... che=1part=maintoolbar=bottom] Page 6 of 489

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient a pharmaceutical composition as recited above. The patient may be afflicted with ovarian cancer, in which case the methods provide treatment for the disease, or patient considered at risk for such a disease may be treated prophylactically.

The present invention further provides, within other aspects, methods for removing tumor cells from a biological sample, comprising contacting a biological sample with T cells that specifically react with a polypeptide of the present invention, wherein the step of contacting is performed under conditions and for a time sufficient to permit the removal of cells expressing the protein from the sample.

Within related aspects, methods are provided for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated as described above.

Methods are further provided, within other aspects, for stimulating and/or expanding T cells specific for a polypeptide of the present invention, comprising contacting T cells with one or more of: (i) a polypeptide as described above; (ii) a polynucleotide encoding such a polypeptide; and/or (iii) an antigen presenting cell that expresses such a polypeptide; under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells. Isolated T cell populations comprising T cells prepared as described above are also provided.

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a T cell population as described above.

The present invention further provides methods for inhibiting the development of a cancer in a patient, comprising the steps of: (a) incubating $CD4^+$ and/or $CD8^+$ T cells isolated from a patient with one or more of: (i) a polypeptide comprising at least an immunogenic portion of polypeptide disclosed herein; (ii) a polynucleotide encoding such a polypeptide; and (iii) an antigen-presenting cell that expressed such a polypeptide; and (b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of a cancer in the

WO0192581 [http://www.getthepatent.com/Lo log/Sexam.support/Fetch/Default.dog/WO0192581.cpc?fro :he=1part=maintoolbar=bottom]Page 7 of 489

patient. Proliferated cells may, but need not, be cloned prior to administration to the patient.

Within further aspects, the present invention provides methods for determining the presence or absence of a cancer, preferably an ovarian cancer, in a patient comprising: (a) contacting a biological sample obtained from a patient with a binding agent that binds to a polypeptide as recited above; (b) detecting in the sample an amount of polypeptide that binds to the binding agent; and (c) comparing the amount of polypeptide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within preferred embodiments, the binding agent is an antibody, more preferably a monoclonal antibody.

The present invention also provides, within other aspects, methods for monitoring the progression of a cancer in a patient. Such methods comprise the steps of: (a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to a polypeptide as recited above; (b) detecting in the sample an amount of polypeptide that binds to the binding agent; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polypeptide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

The present invention further provides, within other aspects, methods for determining the presence or absence of a cancer in a patient, comprising the steps of: (a) contacting a biological sample, e.g., tumor sample, serum sample, etc., obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a polypeptide of the present invention; (b) detecting in the sample a level of a polynucleotide, preferably mRNA, that hybridizes to the oligonucleotide; and (c) comparing the level of polynucleotide that hybridizes to the oligonucleotide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within certain embodiments, the amount of mRNA is detected via polymerase chain reaction using, for example, at least one oligonucleotide primer that hybridizes to a polynucleotide encoding a polypeptide as recited above, or a complement of such a polynucleotide. Within other embodiments, the amount of

WO0192581 [http://www.getthepatent.com/L dog/Sexam support/Fetch/Default.dog/WO0192581.cpc?fro che=1part=maintoolbar=bottom]Page 8 of 489

mRNA is detected using a hybridization technique, employing an oligonucleotide probe that hybridizes to a polynucleotide that encodes a polypeptide as recited above, or a complement of such a polynucleotide.

In related aspects, methods are provided for monitoring the progression of a cancer in a patient, comprising the steps of: (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a polypeptide of the present invention; (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polynucleotide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

Within further aspects, the present invention provides antibodies, such as monoclonal antibodies, that bind to a polypeptide as described above, as well as diagnostic kits comprising such antibodies. Diagnostic kits comprising one or more oligonucleotide probes or primers as described above are also provided.

These and other aspects of the present invention will become apparent upon reference to the following detailed description. All references disclosed herein are hereby incorporated by reference in their entirety as if each was incorporated individually.

BRIEF DESCRIPTION OF THE SEQUENCE IDENTIFIERS

SEQ ID NO: 1 represents the cDNA sequence for clone T29202.

SEQ ID NO: 2 represents the cDNA sequence for clone T29204.

SEQ ID NO: 3 represents the cDNA sequence for clone T29205.

SEQ ID NO: 4 represents the cDNA sequence for clone T29208.

SEQ ID NO: 5 represents the cDNA sequence for clone T29210.

SEQ ID NO: 6 represents the cDNA sequence for clone T29221.

SEQ ID NO: 7 represents the cDNA sequence for clone T29223.

SEQ ID NO: 8 represents the cDNA sequence for clone T34666.

SEQ ID NO: 9 represents the cDNA sequence for clone T34668.

WO0192581 [http://www.getthepatent.com/Lo dog/Sexam support/Fetch/Default.dog/WO0192581.cpc?fro che=1part=maintoolbar=bottom]Page 9 of 489

SEQ ID NO: 10 represents the cDNA sequence for clone T34674.
SEQ ID NO: 11 represents the cDNA sequence for clone T34677.
SEQ ID NO: 12 represents the cDNA sequence for clone T34681.
SEQ ID NO: 13 represents the cDNA sequence for clone T34684.
SEQ ID NO: 14 represents the cDNA sequence for clone T34698.
SEQ ID NO: 15 represents the cDNA sequence for clone T34699.
SEQ ID NO: 16 represents the cDNA sequence for clone T34703.
SEQ ID NO: 17 represents the cDNA sequence for clone T40200.
SEQ ID NO: 18 represents the cDNA sequence for clone T40207.
SEQ ID NO: 19 represents the cDNA sequence for clone T40208.
SEQ ID NO: 20 represents the cDNA sequence for clone T40210.
SEQ ID NO: 21 represents the cDNA sequence for clone T40217.
SEQ ID NO: 22 represents the cDNA sequence for clone T40224.
SEQ ID NO: 23 represents the cDNA sequence for clone T40226.
SEQ ID NO: 24 represents the cDNA sequence for clone T40227.
SEQ ID NO: 25 represents the cDNA sequence for clone T40228.
SEQ ID NO: 26 represents the cDNA sequence for clone T40231.
SEQ ID NO: 27 represents the cDNA sequence for clone T40232.
SEQ ID NO: 28 represents the cDNA sequence for clone T40237.
SEQ ID NO: 29 represents the cDNA sequence for clone T40241.
SEQ ID NO: 30 represents the cDNA sequence for clone T40243.
SEQ ID NO: 31 represents the cDNA sequence for clone T40245.
SEQ ID NO: 32 represents the cDNA sequence for clone T40246.
SEQ ID NO: 33 represents the cDNA sequence for clone T40247.
SEQ ID NO: 34 represents the cDNA sequence for clone T40251.
SEQ ID NO: 35 represents the cDNA sequence for clone T40258.
SEQ ID NO: 36 represents the cDNA sequence for clone T40259.
SEQ ID NO: 37 represents the cDNA sequence for clone T40260.
SEQ ID NO: 38 represents the cDNA sequence for clone T40264.
SEQ ID NO: 39 represents the cDNA sequence for clone T40265.
SEQ ID NO: 40 represents the cDNA sequence for clone T40273.

WO0192581 [http://www.getthepatent.com/Lc dog/Sexam.support/Fetch/Default.dog/WO019258 1.cpc?fro che=1part=maintoolbar=botton Page 10 of 489

SEQ ID NO: 41 represents the cDNA sequence for clone T40274.
SEQ ID NO: 42 represents the cDNA sequence for clone T40283.
SEQ ID NO: 43 represents the cDNA sequence for clone T40284.
SEQ ID NO: 44 represents the cDNA sequence for clone T40287.
SEQ ID NO: 45 represents the cDNA sequence for clone T40288.
SEQ ID NO: 46 represents the cDNA sequence for clone T40289.
SEQ ID NO: 47 represents the cDNA sequence for clone T40291.
SEQ ID NO: 48 represents the cDNA sequence for clone T40292.
SEQ ID NO: 49 represents the cDNA sequence for clone T40293.
SEQ ID NO: 50 represents the cDNA sequence for clone T40295.
SEQ ID NO: 51 represents the cDNA sequence for clone T40296.
SEQ ID NO: 52 represents the cDNA sequence for clone T40299.
SEQ ID NO: 53 represents the cDNA sequence for clone T40300.
SEQ ID NO: 54 represents the cDNA sequence for clone T40305.
SEQ ID NO: 55 represents the cDNA sequence for clone T40306.
SEQ ID NO: 56 represents the cDNA sequence for clone T40311.
SEQ ID NO: 57 represents the cDNA sequence for clone T40319.
SEQ ID NO: 58 represents the cDNA sequence for clone T40320.
SEQ ID NO: 59 represents the cDNA sequence for clone T40321.
SEQ ID NO: 60 represents the cDNA sequence for clone T40326.
SEQ ID NO: 61 represents the cDNA sequence for clone T40329.
SEQ ID NO: 62 represents the cDNA sequence for clone T40342.
SEQ ID NO: 63 represents the cDNA sequence for clone T40344.
SEQ ID NO: 64 represents the cDNA sequence for clone T40348.
SEQ ID NO: 65 represents the cDNA sequence for clone T40354.
SEQ ID NO: 66 represents the cDNA sequence for clone T40359.
SEQ ID NO: 67 represents the cDNA sequence for clone T40361.
SEQ ID NO: 68 represents the cDNA sequence for clone T40366.
SEQ ID NO: 69 represents the cDNA sequence for clone T40368.
SEQ ID NO: 70 represents the cDNA sequence for clone T40369.
SEQ ID NO: 71 represents the cDNA sequence for clone T40374.

WO0192581 [http://www.getthepatent.com/Lr dog/$exam.support/Fetch/Default.dog/WO0192581.cpc?frc iche=1part=maintoolbar=bottom Page 485 of 489

CLAIMS

What is claimed:

1. A method for detecting the presence of ovarian cancer in a patient, comprising the steps of:

(a) obtaining a biological sample from a patient;

(b) contacting the biological sample with an oligonucleotide that hybridizes to a sequence set forth in any one of SEQ ID NO: 1-10,912 under highly stringent conditions;

(c) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and

(d) comparing the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom detecting the presence of ovarian cancer in the patient.

2. The method of claim 1, wherein said sequence is selected from a sequence set forth in any one of SEQ ID NO: 10863-10912.

3. The method of claim 1, wherein said sequence is selected from a sequence set forth in any one of SEQ ID NO: 10864-10869, 10872-10878, 10880-10884 and 10894-10895.

4. The method of claim 1, wherein said detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide is performed by a polymerase chain reaction.

5. The method of claim 1, wherein the biological sample is selected from the group consisting of serum and ovarian tissue.

WO0192581 [http://www.getthepatent.com/Lc dog/Sexam.support/Fetch/Default.dog/WO0192581.cpc?fro che=1part=maintoolbar=bottom Page 487 of 489

6. An oligonucleotide useful in the detection of ovarian cancer in a patient, wherein said oligonucleotide hybridizes to a sequence set forth in any one of SEQ ID NO: 1-10,912 under highly stringent conditions.

7. A diagnostic kit comprising at least one oligonucleotide according to claim 6.

8. A method for detecting the presence of a cancer in a patient, comprising the steps of:

(a) obtaining a biological sample from a patient;

(b) contacting the biological sample with a binding agent that binds to a polypeptide selected from the group consisting of:

(i) a polypeptide encoded by a polynucleotide sequence set forth in any one of SEQ ID NO: 1-10,912;

(ii) a sequence having at least 90% identity to said polypeptide;

(iii) a sequence having at least 95% identity to said polypeptide;

(c) detecting in the sample an amount of polypeptide that binds to the binding agent; and

(d) comparing the amount of polypeptide to a predetermined cut-off value and therefrom detecting the presence of a cancer in the patient.

9. A method for stimulating and/or expanding T cells specific for an ovarian tumor protein, comprising contacting T cells with at least one component selected from the group consisting of:

(a) a polypeptide sequence selected from the group consisting of:

(i) a polypeptide encoded by a polynucleotide sequence set forth in any one of SEQ ID NO: 1-10,912;

(ii) a sequence having at least 90% identity to said polypeptide;

WO0192581 [http://www.getthepatent.com/L... dog/Sexam.support/Fetch/Default.dog/WO0192581.cpc?fo... che=1part=maintoolbar=bottom Page 488 of 489

(iii) a sequence having at least 95% identity to said polypeptide;

(b) a polynucleotide selected from the group consisting of:

(i) a sequence set forth in any one of SEQ ID NO: 1-10,912;

(ii) a complement of a sequence set forth in any one of SEQ ID NO: 1-10,912;

(iii) a sequence consisting of at least 20 contiguous residues of a sequence set forth in any one of SEQ ID NO: 1-10,912;

(iv) a sequence that hybridizes to a sequence set forth in any one of SEQ ID NO: 1-10,912, under highly stringent conditions;

(v) a sequence having at least 90% identity to a sequence set forth in any one of SEQ ID NO: 1-10,912; and

(vi) a sequence having at least 95% identity to a sequence set forth in any one of SEQ ID NO: 1-10,912.

10. An isolated T cell population, comprising T cells prepared according to the method of claim 9.

11. A composition comprising a first component selected from the group consisting of physiologically acceptable carriers and immunostimulants, and a second component selected from the group consisting of:

(a) a polypeptide sequence selected from the group consisting of:

(i) a polypeptide encoded by a polynucleotide sequence set forth in any one of SEQ ID NO: 1-10,912;

(ii) a sequence having at least 90% identity to said polypeptide;

(iii) a sequence having at least 95% identity to said polypeptide;

(b) a polynucleotide sequence selected from the group consisting of:

(i) a sequence set forth in any one of SEQ ID NO: 1-10,912;

WO0192581 [http://www.getthepatent.com/L dog/Sexam_support/Fetch/Default.dog/WO0192581.cpc?fro iche=1part=maintoolbar=bottoPage 489 of 489

(ii) a complement of a sequence set forth in any one of SEQ ID NO: 1-10,912;

(iii) a sequence consisting of at least 20 contiguous residues of a sequence set forth in any one of SEQ ID NO: 1-10,912;

(iv) a sequence that hybridizes to a sequence set forth in any one of SEQ ID NO: 1-10,912 under highly stringent conditions;

(v) a sequence having at least 95% identity to a sequence set forth in any one of SEQ ID NO: 1-10,912;

(vi) a degenerate variant of a sequence set forth in any one of SEQ ID NO: 1-10,912;

(c) a T cell population according to claim 10; and

(d) antigen presenting cells that express a polypeptide selected from the group consisting of:

(i) a polypeptide encoded by a polynucleotide sequence set forth in any one of SEQ ID NO: 1-10,912.

(ii) a sequence having at least 90% identity to said polypeptide; and

(iii) a sequence having at least 95% identity to said polypeptide.